

Report 0

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1 Future - An Idea

I would like to continue my study on neural network (or high-dimensional dynamical systems). In Poland it is impossible, because there are no people who would be interested in developing chaotic neural networks and coding problem. So far I have done all by my self. There was only one semester with "Introduction to neural networks".

2 The Drawer application

It is simple program to visualize discrete chaotic maps. It may be useful for "pedagogical" purposes.

Beside Henon map all of them are 1-D maps. Quadratic map, Tent transformation and Henon map are taken from [25]. They are in every book concerning fractals.

Here are equations for neurons used in `Drawer.exe`. So far I've studied them most. Long time ago I've implemented in PASCAL 7.0 [8] but found nothing interested.

$$f(x) = \frac{1}{1 + \exp(-\frac{x}{0,04})} \quad (1)$$

$$y_{n+1} = ky_n - f(y_n) + a \quad (2)$$

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$$u(x) = \begin{cases} 1 & \text{if } x > 0 \\ 0 & \text{if } x \leq 0 \end{cases} \quad (3)$$

$$y_{n+1} = ky_n - u(y_n) + a \quad (4)$$

$$f_1(x) = \frac{1}{1 + \exp -k(x - 0, 5)} \quad (5)$$

$$f_2(x) = \frac{1}{1 + \exp -k(x - 0, 3)} \quad (6)$$

$$f_3(x) = \frac{1}{1 + \exp -2k(x - 0, 7)} \quad (7)$$

$$y_{n+1} = f_1(f_2(y_n) + af(y_n)) \quad (8)$$

$$y_{n+1} = |\tanh k(y_n - a)| \quad (9)$$

N-S neuron	Chaotic N-S neuron model 1,2	details in [12]
D N-S neuron	Discrete N-S neuron model 3,4	details in [12]
C-B-C neuron	3-neurons unit with full delay 5,6,7,8	details in [9]
Robust neuron	Robust chaos in one neuron 9	details in [24]

N-S neuron and *D N-S neuron* is used in *Report 1*. Literatures are [12], [13].

D N-S neuron is used in *Report 2*. Literatures are [12], [13], [14].

C-B-C neuron is used in *Report 3*. Literatures are [9], [10].

3 The bibliography

I wrote You most of the articles and books which I've read through last years. It's not all but it is enough to know what I am interested in.

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